

## Newsletter nº 6 – April 2016

### WIND RISK web page

Wind Risk project is currently in the second year of implementation, implemented by four partner institutions. The project is being implemented with the contribution of the Civil Protection Financial Instrument of the European Union. The visibility of the project is enhanced by informative and useful web page publishing information about the project progress, wind measurement and reserved partners area for project outputs.

Project activities are divided into 5 sections:

- A – Project management
- B – Wind measurement
- C – Vulnerability assessment
- D – Action plan
- E – Dissemination

Creation of the web page is part of the D section activities, with the expected deliverable “D.e.4. Project website”.

#### ➤ Web page technical features

Wind Risk web page can be reached on the following URLs: <http://www.windrisk.eu> and <http://windrisk.eu>. The web page is hosted on University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture. Hosting is enabled by enabling virtual server and allocating limited resources that are optimized for running a web server. The virtual server has allocated 200 GB of storage space. The server is running Apache<sup>1</sup> web server and MySQL<sup>2</sup> software for database support.

The web site is based on WordPress<sup>3</sup> content management system. WordPress is one of the most popular content management systems. It is an open source project completely developed by the community using open technologies such as PHP and MySQL. It was initially developed as a software support for blogging, but it later emerged as a complete content management system.

Customization of the page started with the selection of a theme. Theme selected for customization is “Inception” theme, which is one of the basic themes that support *responsive web page design*. A feature of responsive web page design is responsiveness to different media – the page should be able to adapt to the size of the screen and appear optimized for desktop computer, mobile phone and tablet. The general elements of the page are replaced depending on the size of the screen that displays the page. Different appearances of the web page are shown in Figure 1.

The template is customized to match the visual identity of the project – wind risk logo is placed besides horizontal navigation bar. The background colour of different links is customized to match the colour of the logo. Header image is also inserted.

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<sup>1</sup> <https://httpd.apache.org/>

<sup>2</sup> <https://www.mysql.com/>

<sup>3</sup> <https://wordpress.org/>

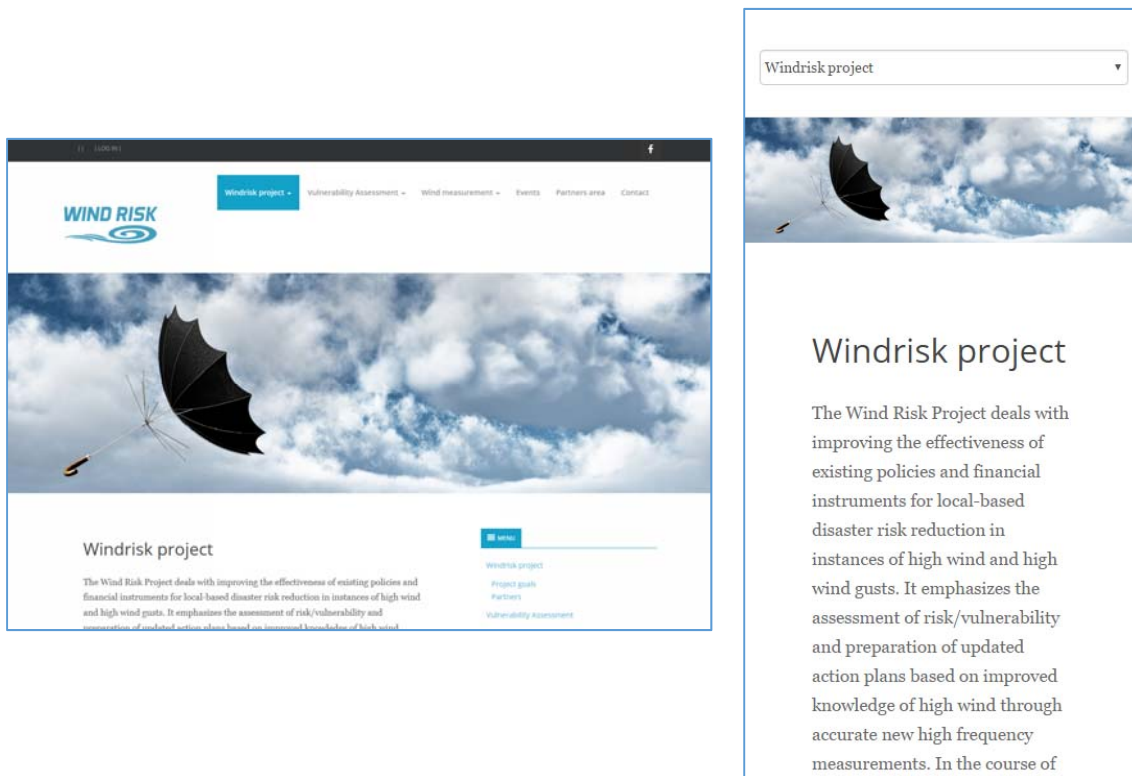


Figure 1: WindRisk web page responsive design: a) web page design on desktop computer b) web page desing on mobile phone

The web page has two navigation bars - primary, horizontal navigation bar in the header part of the page, and secondary navigation bar placed on the right side of the central part of the page. Content of the secondary navigation bar depends on the selected primary navigation section.

In the central part of the page, the left part is reserved for displaying the selected content.

The footer of the page displays obligatory information according to the visibility rules of the EU projects – contacts of the lead partner and funding sources.

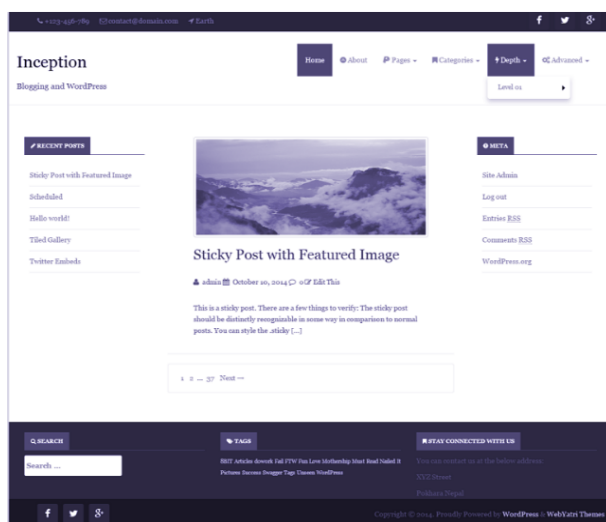


Figure 2: Appearance of the original “Inception Child”  
WordPress template

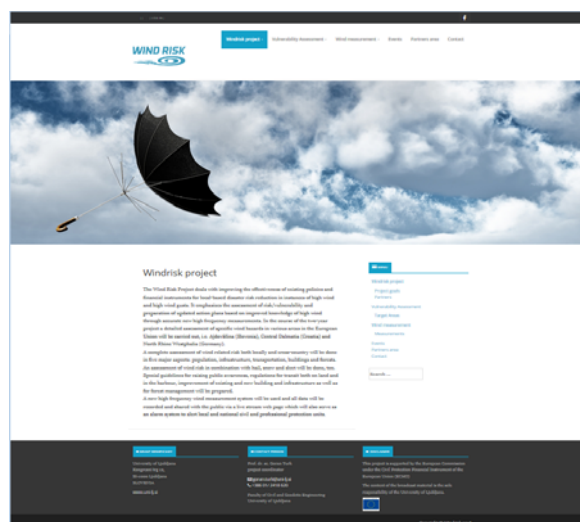


Figure 3: Appearance of the WordPress template  
after customization

## ➤ Web page content

Content of the page is divided into 6 sections:

- Wind Risk project
- Vulnerability assessment
- Wind measurement
- Events
- Partners area
- Contact

Wind Risk project section holds general information about the project goals and project partners. This section is set as a home page of the site. Vulnerability assessment section is created for dissemination of the task C result. Page “Target areas” gives general description of areas whose vulnerability was assessed – Ajdovščina in Slovenia, Central Dalmatia in Croatia and Dortmund area (North-Rhine Westphalia) in Germany.

Wind measurement section provides graphical representation of the measurements taken in the last 24 hours.

Events section is created for reports about project meetings and other events. Partner’s area is a reserved area with privileged information that can be reached only by authorized visitors, i.e. project team members. In this section project output documents are published. Contact section holds a contact form for contacting members of the project team. The contact form sends the inputted data to e-mail address [info@windrisk.eu](mailto:info@windrisk.eu) which is distributed to team leaders of all project partners.

➤ **Wind measurement**

The most valuable part of the page is wind measurement part used for displaying the high frequency measurement system in real time and to archive measurements.

The wind measurement system architecture shown in Figure 4 was described in detail in newsletter no 4.

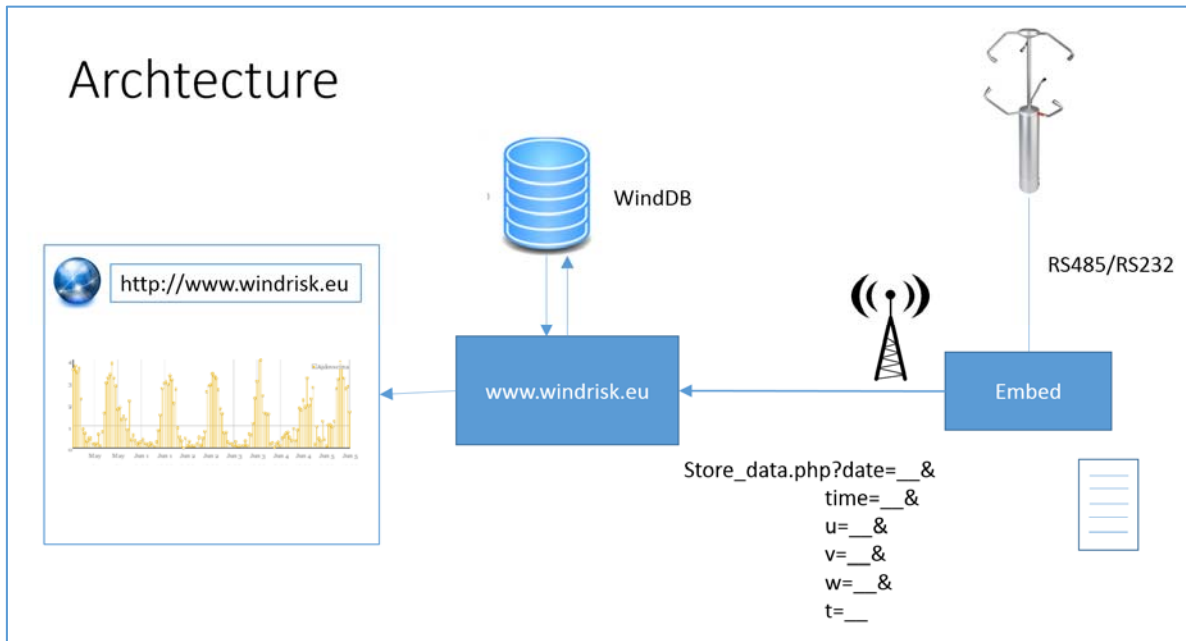


Figure 4: Wind measurement system architecture

Measurements taken by 3D ultrasonic anemometer are transferred via RS485/RS232 converter to RS232 port of the embedded computer located at the site. Measurements are logged locally and periodically pushed to a web service for wind measurement archiving using wireless mobile network. Web service is responsible for storing data into a database. Stored data is then used in analysis and displaying in the form of the graph.

Each data holds information about 10 minute average of 3 dimensional wind vector consisting of u, v and w components and ultrasonic temperature measurement. Data is stored in a database so that each component - u, v, w and temperature are stored separately.

For visualization we are displaying only the amplitude of the vector that is calculated as stated in equation:

$$a = \sqrt{u^2 + v^2 + w^2}$$

We created a custom WordPress plugin for displaying the measurement data as a part of the WordPress web site. A script was created for extracting the data from the database and preparation of the data for chart display. Chart of the measurement is created using the FlotCharts<sup>4</sup> JavaScript library for charting.

Resulting displayed content is shown in Figure 5.

<sup>4</sup> <http://www.flotcharts.org/>

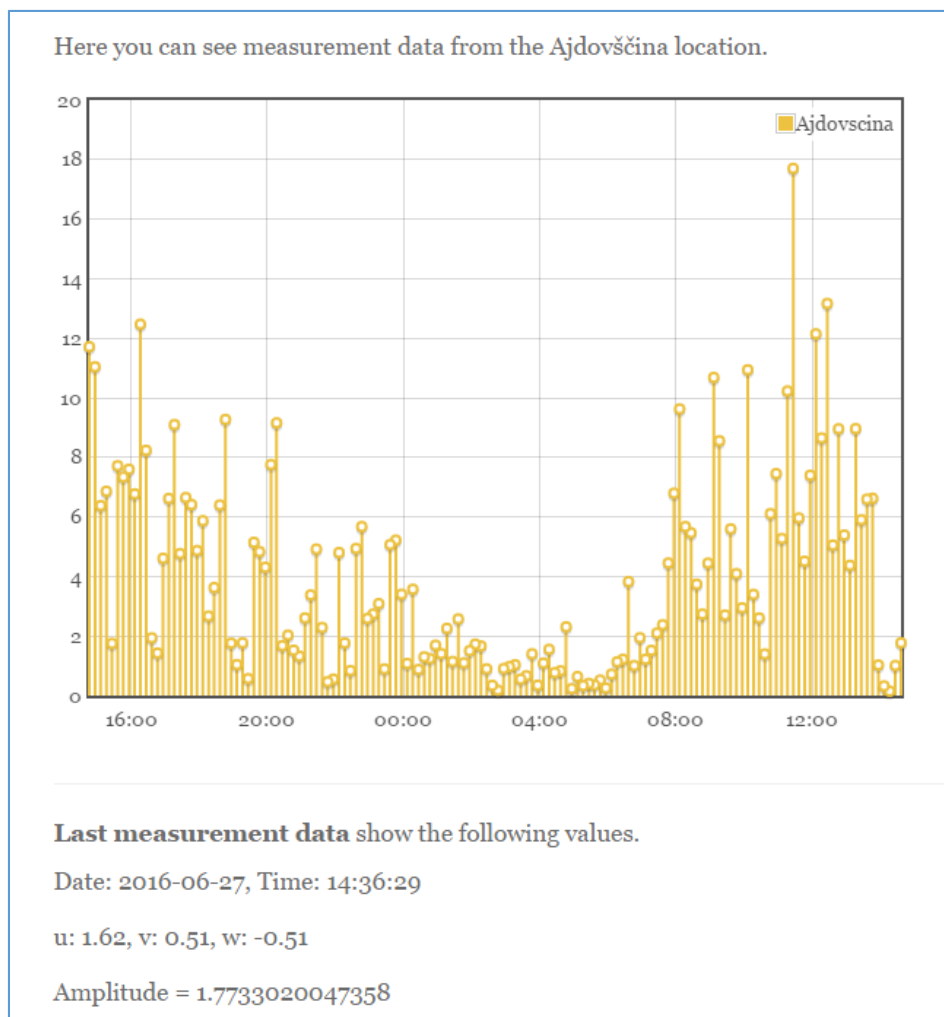


Figure 5: Displaying last 24 hours of measurements from the Ajdovščina measuring station

## ➤ Conclusions

The visibility of the project should be enhanced by a creation of the project web site where all relevant information is shared with the public. The web page is the most convenient medium for dissemination of project goals, activities and results. As a part of Wind Risk project we created a web site that is useful in many different ways:

1. Wind Risk web page disseminated the wind risk project initiative, goals and activities, as well as the partial results.
2. Wind Risk web page contains restricted area for secure sharing of the documents between project partners.
3. Wind Risk web page is also used for displaying relevant real time measurement data that can be used by civil protection units for information.

The web page is built upon WordPress content management system, which is shown to be effective for fast creation of visually effective web sites, but customization of the system and newly developed plugins give the web site unique appearance and wholesomeness.